

The Gravity Field and Interior Structure of Callisto

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Using radio Doppler data from a single encounter (C3) of the Galileo spacecraft with Callisto, we initially reported that this outermost Galilean moon of Jupiter is probably undifferentiated (Anderson et al. (1997), *Nature* **387**, 264 - 266), and similar data from a second encounter (C9) corroborated this conclusion, but data from a third encounter (C10) suggested that there is a concentration of rock and metal (iron and iron sulfide) toward the satellite's center. However, the rock and metal are not completely separated from the ice, nor can Callisto be totally undifferentiated (Anderson et al. (1998), *Science* **280**, 1573-1576). Here we report new results from four Callisto encounters during the Galileo Europa Mission's (GEM) perijove reduction campaign. In particular, the encounter on 30 June 1999 (C21) provided coherent Doppler data during the closest approach at an altitude of 1048 km. Previously, the spacecraft was tracked coherently at Callisto for C10 only. Despite some problems with the coherent tracking outside of the C21 closest approach, and some obvious systematic error caused by the propagation of the radio carrier wave through the Io plasma torus, we have been able to refine Callisto's interior model. The latest results will be presented at the meeting.

This work was sponsored by the Galileo Project and was performed at the Jet Propulsion Laboratory, California Institute of Technology, under contract with NASA. G.S. and W.B.M. acknowledge support by grants from NASA through the Galileo Project at JPL and the Planetary Geology and Geophysics program.

Abstract submitted for AAS [] meeting DPS99

Date submitted: Electronic form version 3.0 (10 June 1999)